# STATE OF VERMONT PUBLIC SERVICE BOARD

Investigation into General Order No. 45	)	
Notice filed by Vermont Yankee	)	
Nuclear Power Corporation re: proposed	)	Docket No. 6545
Sale of Vermont Yankee Nuclear Power	)	
Station and related transactions	)	

Prefiled Direct Testimony of

William Sherman

on behalf of the

Vermont Department of Public Service

#### REDACTED

January 7, 2002

Summary:

Mr. Sherman summarizes the Department's review of the proposed transaction. Other Department witnesses are introduced in his testimony. He summarizes the results of the Department's analyses, and identifies items which must be clarified, resolved or conditioned for the sale to be approved. He identifies considerations and analytical assumptions which have changed since the Department's evaluation of the proposed sale of Vermont Yankee Nuclear Power Station to AmerGen, and he supports certain assumptions used in the Department's evaluations. He also supports the Department's analysis comparing the continued operation of Vermont Yankee with premature closure of Vermont Yankee.

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# Direct Testimony of William Sherman

1	Q.	Please state your name and occupation.
2	A.	My name is William Sherman, and I am an engineer with the Department of Public
3		Service ("The Department"). My responsibilities include oversight for the state of the activities
4		of the Vermont Yankee Nuclear Power Station and the nuclear power industry in general.
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6	Q.	Please describe your educational background and experience.
7	A.	I have a B.S. Degree in Mechanical Engineering from The University of Michigan. I have
8		been with the Department for over thirteen years in the position of nuclear engineer. Prior to
9		coming to the Department I had 18 years of licensing, engineering, and design experience in the
10		nuclear industry. I am a registered professional engineer in three states.
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12	INTE	RODUCTION AND SUMMARY OF TESTIMONY
13	Q.	What is the purpose of your testimony?
14	A.	My testimony summarizes the Department's review of the proposed transaction. Other
15		Department witnesses are introduced in this testimony. I summarize the results of the
16		Department's analyses, and identify items which must be clarified, resolved or conditioned for

the sale to be approved. I identify considerations and analytical assumptions which have

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changed since the Department's evaluation of the proposed sale of Vermont Yankee Nuclear 1 Power Station ("Vermont Yankee") to AmerGen (Docket No. 6300) ("the AmerGen proposal"), 2 3 and I support certain assumptions used in the Department's evaluations. I also support the 4 Department's analysis comparing the continued operation of Vermont Yankee by Vermont Yankee Nuclear Power Corporation ("VYNPC") with premature permanent closure of Vermont 5 6 Yankee. I discuss certain other considerations I believe are important for evaluating the 7 proposed transaction. 8 9 Q. Please describe the proposed transaction ("the sale"). 10 A. Entergy Nuclear Vermont Yankee, LLC ("ENVY") proposes to purchase substantially all 11 the assets of VYNPC including Vermont Yankee, and to have Vermont Yankee operated by Entergy Nuclear Operations, Inc ("ENO"). ENVY and ENO are wholly owned subsidiaries of 12 Entergy Corporation ("Entergy") of New Orleans, Louisiana. 13 14 ENVY Witness Kansler has described the proposed transaction in his prefiled testimony 15 of September 27, 2001 at 17 to 24, and this description does not need to be repeated here. The major components of the sale, as described by petitioners, are as follows: 16 17 1. <u>Purchase Price</u> - ENVY would pay VYNPC a purchase price of \$180 million at closing. 18 The purchase price is not deflated if closing is delayed, as it was in the AmerGen

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proposal.

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2. Decommissioning Fund Top-off - ENVY proposes to accept the Vermont Yankee decommissioning fund of greater than \$304 million as a pre-paid trust fund¹. In the AmerGen proposal, VYNPC would have topped-off its decommissioning trust fund by an amount estimated by petitioners to be \$54.3 million. The decommissioning fund would be transferred to ENVY, which would assume all risks and liabilities associated with decommissioning, including disposal costs for low-level radioactive wastes and costs associated with management of spent nuclear fuel following plant closure. As part of this transfer, ENVY would assume the liability for payment of the approximately \$25 million Texas Compact fee. This fee would be required in accordance with 10 V.S.A. §7067 for payment to Texas for membership in the Texas-Maine-Vermont Low-Level Radioactive Waste Disposal Compact when Texas develops the Compact facility.

3. <u>Power Purchase Agreement</u> - VYNPC would purchase 100% of the current power output of Vermont Yankee from ENVY from the closing date through March 2012, the end of Vermont Yankee's current operating license, through a power purchase agreement ("PPA") at fixed prices<sup>2</sup> starting at approximately<sup>3</sup> \$42.64 per MWh in 2002, decreasing

<sup>&</sup>lt;sup>1</sup> If the value of the decommissioning fund is less than \$304 million at closing, VYNPC would be required to make a payment, not to exceed \$5.4 million, to the fund. Petitioners expect that the value of the fund will exceed \$304 million at closing.

<sup>&</sup>lt;sup>2</sup> The amounts of power purchased by VYNPC at the "base price" of the PPA are limited by the monthly maximums specified in Schedule B of the PPA. Vermont Yankee has and is expected to generate at slightly higher levels even without a capacity uprate. The amounts of such "Schedule B excess power" are expected to be approximately 60 to 100 Gwh per year, as described by DPS witness Biewald. Under the PPA, VYNPC would purchase this excess at the

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to \$39.00 per MWh by 2006, and increasing to \$45.00 per MWh in 2012. VYNPC would have no obligations for payments to ENVY for periods of planned and unplanned shutdown of Vermont Yankee. ENVY would have no obligation to deliver power to VYNPC during planned and unplanned shutdowns of Vermont Yankee.

The PPA includes a low-market adjustment mechanism after 2005. If the power market price<sup>4</sup> for any month is less than 95% of the base price set for that month by the PPA, then the base price to be used in the purchase price formula is adjusted to be the power market price plus 5%.

VYNPC would not purchase power output through the PPA that ENVY developed through increasing Vermont Yankee's output capacity ("power uprate"), nor would VYNPC purchase power output through the PPA after March 2012 if ENVY extended Vermont Yankee's operating license beyond its current expiration date ("license renewal").

NEPOOL energy clearing price.

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<sup>&</sup>lt;sup>3</sup> The PPA price for 2002 is variable, depending on closing date. The prices would be \$30 per MWh in Mar, Apr, May and June; \$55 per MWh in Jul and Aug; and \$49 per MWh in Sep, Oct, Nov, and Dec.

<sup>&</sup>lt;sup>4</sup> Market price is defined as the actual average hourly NEPOOL spot clearing price for electricity for all hours of the 12 month period immediately prior to each billing date, plus the actual clearing price for Installed Capacity (ICAP) in \$/MWh for this same period, or plus 10% of the average clearing price for electricity in the event there is no clearing price for ICAP.

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VYNPC would resell 100% of Vermont Yankee power purchased under the PPA at the same PPA fixed prices to its present sponsors under existing Federal Energy Regulatory Commission ("FERC") approved power contracts (which are submitted to FERC for amendment as part of the proposed transaction). The Vermont sponsors, Central Vermont Public Service ("CVPS") (taking 35% of Vermont Yankee power) and Green Mountain Power Company ("GMP") (taking 20% of Vermont Yankee power), continue to take Vermont Yankee power under the PPA through the end of the current operating license (March 2012).

As part of the proposed transaction, ENVY is seeking FERC approval to become an exempt wholesale generator ("EWG") and to sell power at market-based rates.

ENVY proposes to sell power-uprate power at market rates, and under the current proposal, if Vermont Yankee's operating license were renewed, ENVY would then sell all the output of the plant on the market.

4. <u>VYNPC residual expenses</u> - Following the closing for the proposed sale, VYNPC would retain certain residual expenses identified in the prefiled testimony of September 27, 2001 of VYNPC Witness Wiggett on Exhibit BW-10. These residual costs are much less than identified in the AmerGen proposal. This is primarily because the greater purchase price of the proposed transaction allows payment of existing VYNPC debt and most of the VYNPC equity. These residual expenses would be collected over the remaining

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1		operating license term of Vermont Yankee (until March 2012) from the VYNPC
2		sponsors.
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4	Q.	Besides this present docket, what other approvals are necessary for the proposed transaction?
5	A.	According to the petitioners, ENVY, VYNPC, and the VYNPC sponsors must get
6		various approvals from the FERC, the NRC, the Securities and Exchange Commission, the
7		Internal Revenue Service, the Federal Trade Commission, and the various state public utility
8		commissions.
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10	Q.	In addition to your testimony, what other testimony is being provided by the Department?
11	A.	The Department provides the following additional prefiled testimony:
12 13 14 15		<ul> <li>David Lamont of the Department provides testimony describing the estimated future market prices of electricity which are used for the Department's comparisons of alternatives.</li> </ul>
16 17 18 19		<ul> <li>Paul Chernick of Resource Insight, Inc. evaluates the bid and negotiation process which VYNPC used to arrive at the proposed transaction, and compares the proposed transaction with other nuclear transactions.</li> </ul>
20 21 22 23 24		<ul> <li>Bruce Biewald and David Schlissel of Synapse Energy Economic, Inc. compare the proposed transaction with the alternative of continued operation of Vermont Yankee Nuclear Power Station ("Vermont Yankee") by Vermont Yankee Nuclear Power Corporation ("VYNPC"), evaluate the value of the proposed transaction to the buyer, ENVY, and analyze the shifts of risks and liabilities.</li> </ul>
<ul><li>25</li><li>26</li><li>27</li><li>28</li></ul>		• David Effron, CPA, reviews tax and other financial implications of the proposed transaction and determines the net gain for VYNPC on the sale.

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Andrea Crane of The Columbia Group, Inc. reviews aspects of Entergy's corporate 1 structure and the adequacy of financial assurances provided by ENVY. 2

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- 5 Q. What is the Department's conclusion regarding the proposed transaction?
- The Department can support a sale of VYNPC as evidenced by its previous support for A. the AmerGen Memorandum of Understanding ("AmerGen MOU")<sup>5</sup>. However, considering 7 operation through 2012 and weighing all the aspects of the proposal, the economic benefit of the 8 proposed transaction is not sufficient to justify approval without resolution of the two concerns identified below and the additional conditions identified in the next section of this testimony. The 10 major concerns which must be clarified, resolved or conditioned for the sale to promote the 11 12 general good of the state of Vermont are:
  - If Vermont Yankee's license is renewed for operation beyond 2012, Vermonters must have the benefit of a long-term, economically-attractive power supply in exchange for hosting the nuclear plant all of these years.
  - There must be assurance that economic risks are, indeed, transferred as evidenced by appropriate financial guarantees and corporate structure. The financial assurance issues identified by Witness Crane must be resolved.

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<sup>&</sup>lt;sup>5</sup> Memorandum of Understanding Among AmerGen Energy Company, LLC, AmerGen Vermont LLC, Vermont Yankee Nuclear Power Corporation, Central Vermont Public Service Corporation, Green Mountain Power Corporation, and the Vermont Department of Public Service, Docket, No. 6300, dated November 15, 2000.

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1 Q. Please provide a brief summary of the Department's evaluations.

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In the comparison of alternatives, if Vermont Yankee operated only until the expiration of its current license, Witness Biewald determines that the sale would have a \$13 million overall net present value ("NPV") benefit, and a \$7.2 million NPV benefit for Vermonters<sup>6</sup>. This benefit, which is significantly smaller than the benefit calculated by the petitioners, demonstrates that the economic benefit from the sale if Vermont Yankee operates only until 2012 is marginal.

If Vermont Yankee received a 20-year license renewal<sup>7</sup>, Witness Biewald determines that the sale would be detrimental to all sponsors by an overall NPV amount of \$266 million, and to Vermonter's by a NPV amount of \$146 million. Under the terms of the proposed sale, if the plant is relicensed, the state and its ratepayers would neither get the value from, nor be assured of receiving access to, the power from the nuclear plant at favorable rates.

I determine that the NPV benefit of continued operation by VYNPC until 2012 compared to premature (defined as before the end of the operating license, "EOL") shutdown in 2002 is \$281 million, and therefore premature shutdown is unfavorable for ratepayers<sup>8</sup>.

<sup>&</sup>lt;sup>6</sup> Unless otherwise noted, NPV values and differences are in 2001 dollars.

<sup>&</sup>lt;sup>7</sup> The Department does not imply either its support of or opposition to license renewal by analyzing it as a case for the proposed transaction. Rather, its analysis recognizes license renewal as a possibility for Vermont Yankee which has potential value to ratepayers.

<sup>&</sup>lt;sup>8</sup> The premature shutdown evaluation was not performed for the license renewal period since it would only have shown continued operation to be more favorable.

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Witness Biewald testifies that there appears to be some transfer of risk under the analysis of one sample risk, but that his conclusion is tempered by the uncertainty of who will pay costs and manage decommissioning if ENVY declares bankruptcy. Witness Biewald also states that the value of the PPA should not be considered independently from the whole economic evaluation of the transaction, and that the presence of a low-market adjuster in the PPA is a positive factor of the sale, albeit diminished by the shortcomings he identified.

I determine that the decommissioning cost risk is a minor risk and the transfer of this risk is of relatively little significance in the sale. The loss of local control, and the potential decrease in safety incentive inherent with EWG plant status, are negative factors of the sale.

Witness Crane concludes that the financial assurance proposed by ENVY is not robust and is not adequate in light of the financial challenges ENVY might experience. She determines that a financial guarantee from Entergy is necessary for adequate financial assurance for ENVY, and that other financial safeguards identified in her testimony should be implemented if the proposed transaction is approved.

Witness Chernick determines that J.P. Morgan appears to have structured the auction in an appropriate manner. He also determined that the bid process resulted in a substantial bid and the high bidder was selected. However, he identifies certain concerns with J.P. Morgan and VYNPC regarding the negotiation process.

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Q. The petitioners represent that the proposed transaction represents fair market value for the plant, and that it may be unable to obtain a higher value if this sale is rejected. Is the Department concerned that, if this sale is rejected, Vermont Yankee may remain unsold?

What we seek is the outcome that promotes the general good of the state. Regardless of whether or not ENVY is offering fair market value for Vermont Yankee, or whether no other buyer would offer more than ENVY, the proposed transaction still must promote the general good of the state. Remember, VYNPC and its Vermont sponsors are not obligated or compelled to sell Vermont Yankee. Nuclear plant sales in New York, Massachusetts and Connecticut were the result of legislatively mandated divestiture as part of electric utility restructuring. While certain of VYNPC's sponsors are under such mandates for Vermont Yankee, VYNPC and its Vermont sponsors are not.

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# ADDITIONAL CONDITIONS IF PROPOSED TRANSACTION IS APPROVED

- Q. If the Public Service Board ("the Board," "PSB") finds the sale promotes the general good of the state, does the Department recommend the Board apply certain additional<sup>9</sup> conditions upon the sale?
- 17 A. Yes. These are identified in the table below. A number of these additional conditions

  18 were included in the settlement agreement among VYNPC, AmerGen, and the Department, in

<sup>&</sup>lt;sup>9</sup> The summary of these conditions is identified as Additional Conditions because these conditions are in addition to the two major concerns about the sale identified in the previous section of this testimony.

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Docket No. 6300, documented by the AmerGen MOU. For some of these additional conditions, 1 ENVY has indicated agreement as listed in the "Comment" section of the table below. For 2 others, ENVY has stated its agreement in meetings or in documents which are not yet recorded 3 as part of this Docket. 4

#### **Recommended Additional Conditions for the Sale**

5 6 7 Number Condition Comment 8 MOU for DPS Inspection of VY 9 2. Sharing of Excess ENVY Agreement, Kansler pf at Decommissioning Funds if Decommissioning is Delayed 10 3. Submittal of Quarterly Decommissioning Fund Reports 11 4. Periodic Decommissioning ENVY Agreement, Kansler pf at **Cost Studies** 12 5. PSB Approval for Changes to Decommissioning Trust Fund Agreements ENVY Agreement, Kansler pf at 13 6. Site Restoration 27 ENVY Agreement, Kansler pf at 14 7. Spent Fuel Management 15 8. Entire Decommissioning Fund ENVY stated agreement in Transfer discovery 16 9. **DPS** Participation in Resolution Partial ENVY Agreement, Kansler of Spent Fuel Issues with DOE pf at 27 17 10. Low-level Radioactive Waste Disposal Availability 18 11. Interim Storage of Pre-1983 Spent Fuel 19 12. **PSB** Approval of License ENVY Agreement, Kansler pf at Renewal

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A.

Q. Please describe the recommended condition, MOU for DPS Inspection of VY.

The Department monitors the activities of Vermont Yankee through a memorandum of understanding ("Inspection MOU"). This Inspection MOU provides for daily telephone notification of plant activities from the Vermont Yankee Liaison Engineer, entry and unescorted access to the plant, office space at the plant, and access to Vermont Yankee documents.

If the proposed sale were approved, an Inspection MOU substantially the same as Exhibit DPS-WKS-1 must be executed between the Department and ENVY to allow continued inspection activities. This Inspection MOU provides the same level of access and inspection that the Department now has with VYNPC. In addition, the Inspection MOU is expanded beyond the current memorandum to provide access to specific areas which will allow the state to monitor whether cost cutting is adversely affecting nuclear safety.

If the Board approves the proposed transaction, we recommend the Board condition the approval upon ENVY's agreement to execute an Inspection MOU with the Department substantially the same as Exhibit DPS-WKS-1.

Q. Please describe the recommended condition, Sharing of Excess Decommissioning Funds if Decommissioning is Delayed.

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1	A.	As described in my testimony below, we recommend the Board condition approval of the
2		sale upon ENVY's agreement to share between ratepayers and ENVY any excess funds in the
3		decommissioning fund if decommissioning is significantly delayed.
4	Q.	Please describe the recommended condition, Submittal of Quarterly Decommissioning Fund
5		Reports.
6	A.	As described in my testimony below, we recommend the Board condition approval of the
7		sale upon ENVY's agreement to submit to the Board and the Department a quarterly report of
8		decommissioning trust fund performance, including identification of book values, current market
9		values, and after-tax values of each category of investments in the qualified and non-qualified
10		funds, as reported to ENVY by the funds' managers.
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12	Q.	Please describe the recommended condition, Periodic Decommissioning Cost Studies.
13	A.	As described in my testimony below, we recommend the Board condition approval of the
14		sale upon ENVY's agreement to perform and release periodic studies of decommissioning costs.
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16	Q.	Please describe the recommended condition, PSB Approval for Changes to Decommissioning
17		Trust Fund Agreements.
18	A.	As described in my testimony below, we recommend the Board condition approval of the
19		sale upon ENVY's agreement to submit any proposed disbursement of trust funds for purposes

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1		not related to decommissioning, other than ordinary administrative expenses, and any changes to
2		its decommissioning trust fund agreement, to the Board for approval.
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4	Q.	Please describe the recommended condition, Site Restoration.
5	A.	As described in my testimony below, we recommend the Board condition approval of the
6		sale upon ENVY's agreement that decommissioning includes site restoration, and that site
7		restoration costs are included in decommissioning costs.
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9	Q.	Please describe the recommended condition, Spent Fuel Management.
10	A.	As described in my testimony below, we recommend the Board condition approval of the
11		sale upon ENVY's agreement that decommissioning includes spent fuel management, and that
12		spent fuel management costs are included in decommissioning costs.
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14	Q.	Please describe the recommended condition, Entire Decommissioning Fund Transfer.
15	A.	As described in my testimony below, we recommend the Board condition approval of the
16		sale upon ENVY's agreement that the entire VYNPC decommissioning trust fund will be
17		transferred into the ENVY decommissioning trust fund.
18		
19	Q.	Please describe the recommended condition, DPS Participation in Resolution of Spent Fuel
20		Issues with DOE.

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1	A.	As described in my testimony below, we recommend the Board condition approval of the
2		sale upon ENVY's agreement to afford the Department full participation in resolution of spent
3		fuel issues with the DOE.
4	Q.	Please describe the recommended condition, Low-level Radioactive Waste Disposal Availability.
5	A.	As described in my testimony below, we recommend the Board condition approval of the
6		sale upon ENVY's agreement that it will hold the state of Vermont harmless for any liability
7		under the Low-Level Radioactive Waste Policy Amendments Act of 1985, if no low-level
8		radioactive waste disposal facility is available.
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10	Q.	Please describe the recommended condition, Interim Storage of Pre-1983 Spent Fuel.
11	A.	As described in my testimony below, we recommend the Board condition approval of the
12		sale upon ENVY's agreement that VYNPC is not responsible for management costs for Pre-
13		1983 spent fuel.
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15	Q.	Please describe the recommended condition, PSB Approval of License Renewal .
16	A.	As described in my testimony below, we recommend the Board condition approval of the
17		sale upon ENVY's agreement to obtain approval from the Board prior to operating Vermont
18		Yankee beyond its current license termination date of March 2012.
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CHANGED CONSIDERATIONS SINCE THE AMERGEN PROPOSAL

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1	Q.	Are there changes in the Department's analyses and considerations since the AmerGen proposal
2		in Docket No. 6300?
3	A.	Yes. In the intervening two years since the Department evaluated the AmerGen
4		proposal, events have occurred resulting in certain changed assumptions and considerations.
5		These may be identified as 1) license renewal, 2) power uprate, 3) financial difficulties of electric
6		industry corporations, 4) decommissioning assumptions, and 5) nuclear security.
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8	Q.	Please describe the change in considering license renewal.
9	A.	In Docket No. 6300, the Department did not analyze the economics of license renewal
10		since license renewal of Vermont Yankee was considered speculative. However, as DPS
11		Witness Schlissel testifies, the Nuclear Regulatory Commission (NRC) has approved 20-year
12		license renewal for six nuclear plants, and license renewal now appears to be considered routine
13		for operating nuclear reactors. Therefore, although the petitioners did not present testimony
14		regarding license renewal, the Department analyzes license renewal as a case for the proposed
15		transaction.
16		
17	Q.	Please describe the change in considering power uprate.
18	A.	The Department did not specifically consider power uprate in its analysis for Docket No.
19		6300. Since the evaluation of the AmerGen proposal, nuclear utilities have increasingly found

power uprate to be an effective method in developing cost-efficient power, as describe by DPS

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Witness Schlissel. In Docket No. 6460 (CVPS rate increase), I evaluated a 1998 proposal for a 5% power uprate at Vermont Yankee. In prefiled testimony filed in March 2001, I testified that VYNPC should have implemented the power uprate proposal<sup>10</sup>. Therefore, power uprate, as described by DPS Witnesses Schlissel and Biewald, is included as part of the analysis for the proposed transaction.

- Q. Please describe the change in the Department's consideration as a result of financial difficulties of
   utilities.
- 9 A. In Docket No. 6300, in prefiled rebuttal testimony of June 2, 2000, at 13, I testified regarding financial assurance that:

I also agree that PECO, Unicom, and British Energy's reputation and prominent position in the power industry is a valid consideration, which makes remote the possibility that AmerGen Vermont will not honor its commitments.

This reliance on the prominence of PECO, Unicom and British Energy formed, in part, the basis upon which the Department agreed that financial risks were, in fact, transferred to the limited liability corporation buyer, as asserted by the petitioners. However, in the intervening time since the AmerGen proposal, we have seen bankruptcies of major electric industry players, Pacific Gas & Electric Company and Enron Corp. Because of these bankruptcies, the Department is no longer willing to credit the transfer of risk beyond the financial guarantee provided to the limited liability corporation buyer.

<sup>&</sup>lt;sup>10</sup> VYNPC has indicated it is currently pursuing power uprate.

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Q. Please describe the change in decommissioning collection assumption for the evaluation of the
 proposed transaction.

For the evaluation of the proposed transaction, the Department assumes, for VYNPC ownership, VYNPC will continue to contribute to the decommissioning fund at the current FERC-approved rate through the end of 2002. After 2002, the Department assumes the fund will be pre-paid and VYNPC will not make further payments to the fund. The fund will continue to grow through investment returns until sufficient to accomplish decommissioning. The fund will meet the NRC's pre-paid fund requirements, which would be the same as demonstrated by ENVY in its NRC License Transfer application for the proposed transaction (see Exhibit DPS-WKS-2). If investment returns did not produce sufficient funds to complete decommissioning, either at the time of premature closure or at the end of the operating license, then decommissioning would be delayed until the fund grew to a value sufficient to accomplish decommissioning.

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How does this assumption differ from the assumption used in Docket No. 6300?

In Docket No. 6300, I assumed decommissioning for any premature closure would be delayed until 2012. However, in all cases (premature closures and closure at the end of the operating license), I assumed collection rates to provide for non-delayed decommissioning beginning in 2012. I calculated these collection rates by using VYNPC's estimate of decommissioning costs as a basis, and making adjustments to VYNPC's estimate. These

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adjustments resulted in collections significantly less than calculated by VYNPC. In Docket No. 1 2 6300, VYNPC used a decommissioning collection amount of \$17 million per year, whereas I calculated a collection rate of \$10.9 million per year. (Consistent with FERC practice, both 3 4 VYNPC and I assumed the collection rate was escalated upward at 5-year intervals.) 5 6 Q. What decommissioning collection assumption did VYNPC use for the proposed transaction? 7 A. VYNPC used the same methodology as in Docket No. 6300. It provided a revised study which increased its estimate of decommissioning costs, such that annual collections started at 8 9 \$19.5 million per year. I do not agree with VYNPC's new estimate of decommissioning costs for the same reasons stated in my prefiled direct testimony in Docket No. 6300. However, rather 10 11 than make adjustments as in Docket No. 6300, I chose the revised assumption described above. 12 13 Q. Please identify the reasons for choosing the revised assumption of no VYNPC decommissioning collections after 2002. 14 15 A. Before specifically listing the reasons for my choice, let me trace the evolution of 16 decommissioning collections issues. Prior to the mid-90's, most decommissioning collections 17 were set by studies performed by TLG Associates. TLG calculated decommissioning 18 significantly higher than the NRC, but state regulators were pleased to use higher collection rates 19 for the low-funded decommissioning funds to assure sufficient funding was available. Cost-of-

service based utilities were also pleased to use higher estimates for the same reasons. In the mid-

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90's, restructuring and utility competition created new cost-conservation thinking. With competitive pressure and without a guaranteed ratepayer pool, utilities and regulators began to see the value of the ability of the decommissioning fund to grow by investment returns. The Department's 1999 *Vermont Yankee Economic Study* was one of the first reports to recommend delaying decommissioning for a prematurely closed plant while the decommissioning grew by investment returns.

The purchase of nuclear plants by non-utility entities has further developed the consideration of decommissioning collections. Purchasing entities choose to meet NRC requirements by demonstrating pre-paid decommissioning funds according to NRC's formula. Following this demonstration, purchasing entities do not intend to contribute further to the fund. If the fund were not sufficient at the time of shutdown, decommissioning could be delayed until the fund grew by investment returns<sup>11</sup>.

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- Q. Please continue to list your reasons for choosing the zero-collection decommissioning assumption.
- A. Six reasons for the changed decommissioning assumption are stated below:

<sup>&</sup>lt;sup>11</sup> In Docket No. 6460 (CVPS rate case), in prefiled rebuttal testimony submitted on April 20, 2001, at 33-36, I testified that Dominion Energy would not have further collections for the Millstone 3 decommissioning fund. CVPS did not agree at the time, but has since confirmed this fact. In Docket No. 6300, AmerGen Witness Hawthorne described AmerGen's intention to employ this process of delaying decommissioning for fund growth. Tr 5/12/00 at 166-7.

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For the proposed transaction, ENVY demonstrates a prepaid decommissioning fund by 1. 1 the NRC formula (see Exhibit DPS-WKS-2). ENVY does not anticipate making 2 additional deposits to the fund (see Exhibit DPS-WKS-3). Therefore, if the fund is 3 underfunded, ENVY plans to rely on delaying decommissioning. 4 \* \* Confidential below \* \* 5 6 7 8 9 \* \* Confidential above \* \* 10 (See Confidential Exhibit DPS-WKS-4). If ENVY's plans consider a prepaid fund and 11 12 the possibility of delaying decommissioning, there is no reason these same plans should not be applied to VYNPC ownership<sup>12</sup>. 13 2. 14 Some may argue that VYNPC's costs for decommissioning Vermont Yankee will be significantly more than ENVY's, and that the delay required by VYNPC would be much 15 16 longer, and maybe unacceptable, than the delay for ENVY. I do not agree. It is true that VYNPC represents its decommissioning costs would be higher than ENVY's. I do 17 believe ENVY could achieve some savings. However, at the time of decommissioning, 18

<sup>&</sup>lt;sup>12</sup> As co-petitioner in this docket and supporter of the proposed transaction, VYNPC implicitly assents to this plan for the closed nuclear plant to remain in SAFESTOR in Vermont beyond the 2012 license expiration date. There is therefore no reason not to apply the same assumption to VYNPC ownership.

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VYNPC will be able to hire expertise to implement savings it is not now considering. For example, in Response to DPS Information Request 2-55 (see Exhibit DPS-WKS-5), ENVY provided a letter from Entergy to VYNPC documenting its offer to provide savings up to \$100 million in the ultimate cost of decommissioning if it is engaged to manage the effort. Therefore, I don't believe the difference in decommissioning costs for VYNPC and ENVY will be significantly different.

3.

- It is not detrimental to delay decommissioning beyond 2012 and there is no reason for ratepayers to pay more to avoid such a delay. Decommissioning is required in order to remove from the site residual low-level radioactive waste associated with the equipment and structures remaining on the site. However, the radioactivity associated with these decommissioning wastes is minuscule compared to the radioactivity associated with spent nuclear fuel which will be managed at the site, according to VYNPC, until 2031 (for a 2012 shutdown). There is little value in paying millions to remove the small amounts of radioactivity in decommissioning, while leaving the really highly radioactive spent fuel at the site. Delaying decommissioning a few years for fund growth, to the benefit of ratepayers, is a desirable plan.
- 4. Investment returns are likely to outperform the conservative assumptions used for fund growth. Since 1994, the VYNPC fund has significantly outperformed the investment return assumed in setting the collection rates for 1994 to 2001. It is possible that sufficient funding will be available in 2012. If VYNPC were to receive license renewal,

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the investment returns over the license renewal period would result in a fund value far in excess of decommissioning cost requirements.

- 5. As stated later in my testimony, it is not clear that low-level radioactive waste disposal will be available at the time of decommissioning. Envirocare of Utah cannot take Classes B and C waste, and the facility in Barnwell, SC, is scheduled to be closed to Vermont Yankee wastes after 2008. There has been no significant progress to date in developing a Texas facility. Therefore, at the time of decommissioning there may be no facility available in which to dispose of Classes B and C low-level waste. In that event, decommissioning would need to be delayed anyway.
- Finally it is necessary to make the zero-collection assumption in order to compare the proposed transaction with continued VYNPC ownership and operation on an even basis. It is not an even comparison to consider VYNPC ownership with non-delayed decommissioning starting at 2012, with ENVY ownership and delayed decommissioning. The Department could either choose to make the zero-collection assumption for VYNPC, or require ENVY to top-off the decommissioning fund with either a one-time payment or periodic payments. I have chosen the zero-collection assumption because there is no reason decommissioning should not be delayed beyond 2012 if it benefits ratepayers.

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Q. What is the effect on the evaluation of the proposed transaction of the changed decommissioning collection assumption?

This assumption shows VYNPC could operate Vermont Yankee for less than they claim.

As shown by DPS Witness Biewald's testimony, this reduces the calculated costs for continued VYNPC ownership and tends to make the proposed transaction less attractive.

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Please describe the changed consideration related to plant security.

The terrorist attack of September 11 has caused a redefinition of security requirements at nuclear plants. In discovery, VYNPC identified a \$1.5 million additional operating cost requirement for security, and a \$1.1 million capital cost. These additional costs were not included in VYNPC's evaluation for the sale. The Department has used these estimates as representative of new security costs, assuming for its base case, a one time capital addition of \$1.1 million and an operating cost increase of \$1.5 million for every year. For the decommissioning period, this additional security cost is reduced to an additional \$1 million per year. Actual security costs may be greater or less than these amounts. Our analyses include sensitivity cases showing that increases or decreases will not greatly influence the results of the analyses. It is my judgement that these estimates are in a reasonable range for the actual security increases. I do not foresee additional security costs which are an order-of-magnitude greater than these estimates.

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Q. You have described five changed considerations since the AmerGen proposal. Please describe
 what the effect would have been on the evaluation of the AmerGen proposal if these changed
 considerations had been applied.

A comparison of the AmerGen proposal is shown in the box below. This comparison shows the 1) Department's evaluation of the benefit of the proposal in Docket No. 6300, 2) the evaluation of the AmerGen proposal that would have resulted from the changed considerations identified above, and 3) the evaluation of the current proposal.

Comparison of AmerGen Proposal with Changed Considerations from Docket No. 6545 (2001 dollars in millions)

	Final AmerGen Proposal, from Docket 6300	Final AmerGen Proposal, with Docket 6545 Assumptions	Entergy Proposal in Docket 6545
Calculated NPV Benefit of the Proposed Sale vs. Continue Ownership - Operation until 2012	\$81	(\$110)	\$13

A.

This comparison demonstrates that, using the new information that has become available since the Department's evaluation in Docket No. 6300, we would not have calculated a benefit to ratepayers for the AmerGen proposal. Once again, in the intervening time since our evaluation in Docket No. 6300, it has become apparent that VYNPC can operate Vermont Yankee more economically that we believed in Docket No. 6300.

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1 Q. Do you have comments on other assumptions for the Department's analysis?

Yes. DPS Witness Biewald describes the Department's base case analysis. I have comments regarding the assumption for damages related to spent fuel expected from the U.S. Department of Energy (DOE) and the assumption for O&M costs in 2012, the year Vermont Yankee's current operating license expires.

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Q. Please describe the assumption used for damages related to spent fuel expected from DOE.

The Nuclear Waste Policy Act of 1982 established the requirement for nuclear licensees to enter into the DOE Standard Contract. The contract has required ratepayers to pay a fee of one mill per kilowatt-hour to the federal government for every kilowatt-hour produced by Vermont Yankee after 1982 ("the mill charge"). In return, DOE was obligated to begin removing spent nuclear fuel from reactor sites in 1998. Vermont Yankee's first shipment of fuel should have been shipped from the site in 1999.

The DOE Standard Contract also established a fee for spent nuclear fuel generated before 1983. The contract allowed immediate payment of the fee, or delayed payment with accumulated interest when the first fuel is taken from the site. VYNPC chose the latter option and now holds a Spent Fuel Trust Fund valued at over \$100 million. In the proposed transaction, VYNPC would retain the Spent Fuel Trust Fund.

When the DOE failed to remove spent fuel from nuclear sites, beginning in 1998, two lawsuits resulted in the following determinations. In <u>Indiana Michigan</u>, the D.C. Circuit Court

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determined that DOE was required to commence disposal services by January 31, 1998 irrespective of the existence of a suitable facility or interim storage arrangements. The obligation was "without qualification or condition." <u>Indiana Michigan Power Co. v. United States</u>, 88 F.3d 1272, 1276 (D.C. Cir. 1996). In <u>Northern States Power</u>, the Court acknowledged the petitioners were entitled to damages within the language of the Standard Contract. <u>Northern States Power</u> Co. v. DOE, 128 F.3d 754, 761 (D.C. Cir. 1997).

A number of petitioners currently have actions pending in the Court of Federal Claims to determine the level of damages resulting from DOE's failure to perform its contractual obligation. Other nuclear operators are negotiating with DOE for possible settlement of damage claims from the Standard Contract.

There is a clear expectation that VYNPC would receive damages if it continued to own and operate Vermont Yankee<sup>13</sup>. Nevertheless, VYNPC does not include receipt of these damages in its forecasts. Furthermore, VYNPC does include amounts in its forecast to own and operate that are a direct result of DOE's failure - specifically dry cask storage costs. VYNPC has not pursued these damages in the courts, but has calculated an amount for these damages. In discovery, we asked for VYNPC's calculation of damages and it provided Response DPS 1-13 (included as Exhibit DPS-WKS-6)<sup>14</sup>.

<sup>&</sup>lt;sup>13</sup> In the proposed transaction, Entergy would receive any damages if the sale were approved.

<sup>&</sup>lt;sup>14</sup> In Response DPS 1-13, VYNPC includes the disclaimer, "This document was prepared for discussion and background purposes only." Since the Department has not attempted to independently estimate VYNPC's damages from DOE failure, DPS 1-13 represents the best estimate available.

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Response DPS 1-13 includes damage costs from 1997 to 2031. For the purpose of evaluation, I assumed costs after 2012 would be accounted for within the decommissioning process. Costs prior to 2012 should be included as a deduction to operating expenses. For our base case, I summed the dollar costs from 1997 to 2012 from DPS 1-13, and redistributed the damage costs, without escalation, into the years 2002 to 2011, to represent damage returns in these years by DOE<sup>15</sup>.

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- Q. Please describe the assumption related to O&M costs in 2012, the year Vermont Yankee's current operating license expires.
  - In Exhibit BW-9, VYNPC Witness Wiggett includes a base operating expense for the year 2012 of \$76 million. This represents his assumption that VYNPC will require eight additional months of the same staff costs as during operation in order to complete its decommissioning plan. I consider this an unreasonable assumption for the following reason. Since the end-of-operation in 2012 would be known, VYNPC could develop its decommissioning plans and post-shutdown documents well before shutdown, converting the use of staff normally engaged in refueling outage planning and other forward activities, to post-shutdown planning. I believe these documents could be submitted to NRC and pre-approved,

<sup>&</sup>lt;sup>15</sup> The Department's expectation is that VYNPC will not settle with DOE for less than full reimbursement of damages. I realize the distribution of returns I have chosen is not definitive. However, if these damages are received later in time, I would expect VYNPC to be successful in demanding compensation from DOE for the time value of money.

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such that, at shutdown, VYNPC could effect a prompt staff reduction. Therefore I eliminate these eight additional months of staff costs for the Department's evaluations.

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## COMPARISON OF CONTINUED OPERATION WITH PREMATURE SHUTDOWN

Q. Please describe the manner in which you have compared continued operation with prematureshutdown.

The Department prepared a January 1999 *Vermont Yankee Economic Study* which found there was a \$153 million NPV benefit for continued operation to the end of the current operation license ("EOL") when compared with premature shutdown in 1999. In Docket No. 6300, premature shutdown was again evaluated as part of my prefiled direct testimony of April 14, 2000. That evaluation found a \$196 million NPV benefit for continued operation through EOL when compared with premature shutdown in 2001.

For this testimony, premature shutdown was again evaluated. The methodology employed is essentially the same as used in 1999 and 2000. The base case assumptions identified by DPS Witness Biewald were used for the shutdown evaluation, including the changed considerations identified earlier in this testimony. I calculated NPV estimates for costs to prematurely close Vermont Yankee at its scheduled refueling outages in 2002, 2004, 2005, 2007, and 2008.

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Q. Please summarize the results of your shutdown evaluation.

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1 A. The overall results are shown in the box below:

# Summary of Base Case Results and Comparisons of NPV of Alternatives (2000 dollars in Millions)

	NPV COSTS	Difference	
Shutdown Year	(millions)	Prev Year	From EOL
2002	\$1,502		281
2004	\$1,445	(57)	224
2005	\$1,433	(12)	212
2007	\$1,402	(32)	181
2008	\$1,367	(34)	146
EOL	\$1,221	(146)	0

These results show a \$281 million NPV benefit to continue operating the plant over prematurely closing the plant in 2002. (The amounts shown in the table are for 100% of the plant costs. Vermont sponsors are responsible for 55% of Vermont Yankee's costs. Vermont costs are 55% of the costs shown in the table.)

- Q. Why does your latest shutdown evaluation show a greater NPV benefit for continued operation than previous evaluations?
- A. There are many differences between the latest evaluation and the previous evaluations, including a different forecast of Vermont Yankee costs and a different market price forecast.

  The clearest way to understand the difference is this: In the evaluation for this docket it is realized and assumed that VYNPC will operate Vermont Yankee more economically through implementing power uprate, reducing decommissioning payments, receiving spent fuel damages

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from DOE, and realizing O&M savings. This more efficient and economical operation makes 1 2 continued operation more attractive when compared with premature shutdown. 3 4 Q. Please identify more specifically the assumptions used for the shutdown evaluation. 5 A. I chose the years, 2002, 2004, 2005, 2007, and 2008 as representative years to evaluate 6 shutdown. According to Vermont Yankee's refueling schedule, each of these years has a 7 refueling outage scheduled, and I assumed a planned premature closure at the beginning of the 8 refueling outage. As a basis I used VYNPC's operating cost forecast from Witness Wiggett's 9 Exhibit BW-9. With the exception of the decommissioning collection, I generally used the 10 methodology described in Chapter 4 of the 1999 DPS Study to calculate shutdown NPV's. 11 12 Q. How did you determine the additional cost per year for SAFESTOR decommissioning? 13 For each premature shutdown case, I assumed the plant was placed in SAFESTOR until 14 2012 when funding from the decommissioning fund began. I used a value of \$5 million per year (in 1999 dollars) as a representative assumption for the yearly SAFESTOR costs. I also added 15 16 an additional \$1 million per year for additional security costs. 17 18 19

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1	Q.	What is your conclusion regarding your shutdown evaluation?
2	A.	I conclude that continued operation is significantly less costly than premature shutdown
3		Furthermore, the conclusions restated below from the 1999 Vermont Yankee Economic Study
4		remain valid:
5 6 7 8 9 10		Until there is more certainty associated with future replacement power costs predictions, caution is appropriate in considering whether to discontinue operation of Vermont Yankee even if its short term economic results are marginal. Continuing to operate if costs appear to be on-the-margineither positive or negativeprovides a hedge against replacement power more expensive than now predicted.
12		(1999 DPS Study, at 46.)
13 14 15 16 17 18 19 20 21 22 23 24 25 26		Even if the plant were at the breakeven point, continued operation could continue to be desirable because of the uncertainty in future replacement power costs. The volatility of the electric industry as a result of restructuring and competition, and possible government actions to meet greenhouse gas emission targets, leave the possibility that future replacement power costs may be higher than currently predicted. A decision to shut down with marginal economics would leave ratepayers open to risks of significant additional costs if replacement power turns out to be more expensive than predicted.  (1999 DPS Study, at 54.)
27	Sensi	tivity Checks
28	Q.	Did you perform a sensitivity check for the shutdown evaluation related to security costs?
29	A.	Yes. I performed a sensitivity check to determine the effect of a large security cost
30		increase. The base case reported above includes an annual \$1.5 million security increase during
31		operation and an annual \$1 million security increase after shutdown. I then added a large

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security cost increase of approximately \$10 million per year, an unreasonably high assumption in my judgement, for each year of operation. The results of this case are shown in the box below.

Summary of Large Additional Security Cost Results and Comparisons of NPV of Alternatives (2000 dollars in Millions)

	NPV COSTS	Difference	Difference
Shutdown Year	(millions)	Prev Year	From EOL
2002	\$1,520		225
2004	\$1,472	(48)	177
2005	\$1,474	2	179
2007	\$1,450	(24)	155
2008	\$1,425	(24)	130
EOL	\$1,295	(130)	0

These results demonstrate that, even assuming an unreasonably high security cost increase, continued operation is clearly preferred.

Q. Did you perform a sensitivity checks for the shutdown evaluation for various market price forecasts?

A. Yes. Besides the DPS 2001 forecast used for the base case, I checked a CVPS, GMP and Entergy forecast. The CVPS and GMP forecasts are included in CVPS Witness Page's testimony, Exhibit CVPS Page-2. The Entergy forecast is taken from Confidential Entergy discovery response DPS 1-25. The results of these sensitivity checks are shown in the box below:

Summary of Market Price Forecast Sensitivity Results and Comparisons of NPV of Alternatives

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## (2000 dollars in Millions)

\*\*Confidential Column \*\*

	DPS	2001	CVPS	CVPS		GMP		GY
Shutdown	NPV	Diff	NPV	Diff	NPV	Diff	NPV	Diff
Year	COSTS	From	COSTS	From	COSTS	From	COSTS	From
		EOL		EOL		EOL		EOL
2002	\$1,502	281	\$1,470	249	\$1,433	212	\$xxxxx	XXX
2004	\$1,445	224	\$1,384	163	\$1,358	137	\$xxxxx	XXX
2005	\$1,433	212	\$1,362	141	\$1,338	117	\$xxxxx	XXX
2007	\$1,402	181	\$1,335	114	\$1,319	98	\$xxxxx	XXX
2008	\$1,367	146	\$1,313	92	\$1,305	84	\$xxxxx	XXX
EOL	\$1,221	0	\$1,221	0	\$1,221	0	\$xxxxx	XXX

\*\*Confidential Column \*\*

Of the forecasts tested, the GMP forecast is the lowest, starting at \$42.82 per MWh in 2002, dropping to \$37.82 per MWh in 2006, and increasing to \$46.87 per MWh in 2012. As expected, the GMP results show smaller benefits for continued operation than other options. However, all show a benefit to continued operation.

The Department recognizes that forecasting future market prices is an imprecise endeavor. Nevertheless, the shutdown results for the various forecasts are such that the conclusions from the 1999 *Vermont Yankee Economic Study*, quoted above, still apply, and continued operation is preferred over premature shutdown.

## TESTIMONY ON RISKS, SAFETY, AND OTHER CONSIDERATIONS

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1	Q.	Q. Please identify the risks, safety issues and other considerations which you believe are important		
2	for evaluating the proposed transaction.			
3	A.	A. The box below identifies risks, safety issues and other considerations which I found were		
4		important for evaluation of the proposed transaction:		
5 6			Operational Safety and Reliability	1
				-
7			Nuclear Waste Issues	
8			Decommissioning Issues	
9			License Renewal	
10			Vermont Control Issues	
11				
12	Opera	ational Safety and Reliability	V	
13	Q.	Q. Please describe the consideration of the potential effects of the transfer on safe and reliable		
14		operation.		
		•		
15	A. VYNPC has operated Vermont Yankee safely and reliably during its nearly thirty-year			
16	history. In prefiled direct testimony in Docket No. 6300, at 78, I described changes which have			
17	been occurring at the NRC since October 1998, and stated:			
18 19 20 21 22	NRC remains a tough, though not perfect, regulator. The regulatory system established over the years is robust, and I intend to monitor the changes to regulatory aspects as they may effect Vermont Yankee.			
23	Q.	Q. How would you characterize the manner in which NRC has regulated Vermont Yankee?		

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NRC, over the forty years of commercial nuclear history, has created a highly developed system of requirements for design, construction, operation and oversight of nuclear plants. Hallmarks of the system of NRC requirements are defense-in-depth, conservatism and rigorous inspections. Defense-in-depth means that more than one method or system are provided to accomplish the same safety function. Conservatism refers to the practice of deliberately estimating high or low, depending on the circumstance, to bias evaluations toward higher levels of safety to account for uncertainties or the unexpected. Regarding inspections, the NRC has had two full time inspectors at the Vermont Yankee site. The NRC's regulation of the nuclear industry has resulted in an industry with an impressive safety record.

Q.

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A.

Please describe the changes that had been occurring at the NRC prior to the AmerGen proposal.

In that period, NRC had added an additional major strategy to its regulatory mission - to reduce unnecessary regulatory burdens. Under this strategy, aggressively managed by the last two NRC Chairpersons, NRC has reduced the level of its regulation in a number of areas. NRC ended its former oversight process, which provided numerical evaluations for plant performance, and replaced it with a Revised NRC Oversight Process, which gives much less differentiation regarding performance. It also terminated its "problem plant list." NRC has revised other aspects of its regulatory system, including a reduction in the frequency of reactor containment integrity testing, termination of NRC testing of reactor operators, essentially eliminating fines

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from its enforcement policy, reduction in the requirements on safety systems, and reduction in requirements for design basis accidents.

A major factor in these changes was the evolution of probabilistic risk assessment technology. This analytical method has developed such that areas important to safety can be differentiated from areas of little safety significance. NRC claims the changes it has made reduce regulation in areas of little safety significance.

Q.

A.

Have you continued to observe these NRC changes since the AmerGen proposal?

Yes. Since the AmerGen proposal, NRC has continued making additional changes beyond those described above. One example is the Operational Safeguards Response Evaluations (OSREs). The OSRE is a force-on-force test NRC performed to test the readiness of plant security provisions. Nuclear plants often did not perform well on the OSRE tests, and the nuclear industry opposed these tests and claimed that individual plants could just as well test their own security forces. Under this urging from the industry, NRC invoked the "reduce-unnecessary-regulatory-burden" strategy, and announced its intentions to terminate these tests. Subsequently, the events of September 11 intervened, and it is hoped NRC will reverse its announcement and continue the OSRE testing program.

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1 Q. Do you have a concern with these changes to NRC regulation?

2 A. Yes. As I stated above, the nuclear industry has had a good safety history because of the 3 NRC method of regulation through defense-in-depth, conservatism and inspections. The NRC changes are reducing the defense-in-depth, conservatism and inspections that have created the 4 5 successful safety history. I believe this puts Vermont Yankee in uncharted waters regarding 6 future safety.

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- Q. Does this concern over NRC safety reductions relate to the proposed transaction? 8
- Yes, because in the transaction, ENVY is requesting Exempt Wholesale Generator A. (EWG) status for Vermont Yankee. As an EWG, ENVY would charge market rates for 11 Vermont Yankee. Vermont Yankee is currently a cost-of-service plant. Under cost-of-service 12 regulation, all prudently incurred expenses are passed through the sponsors to ratepayers<sup>16</sup>. 13 From a safety aspect, cost-of-service regulation is attractive for nuclear plants in this regard: if 14 extra revenues are necessary for safety reasons, these revenues may be directly acquired through billing<sup>17</sup>.

<sup>&</sup>lt;sup>16</sup> This is true specifically of the Vermont sponsors, and only to a lesser degree to out-of-state sponsors who are under various mandates related to restructuring in their states.

<sup>&</sup>lt;sup>17</sup> It is acknowledged this can create undesirable effects for certain sponsors. If there is no fuel adjustment charge, the sponsors may not directly be able to recover their between rate cases costs from ratepayers unless the charge is large and extraordinary, qualifying for special relief. It is also recognized that, while shedding the risk of unexpected safety costs may be a benefit to the sale, the concomitant economic pressure on safety funds is a negative aspect.

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Under EWG status, Vermont Yankee would operate under competitive pressure to achieve profitability goals. In this scheme, there would be strong incentives to reduce costs in order to increase profitability. These incentives would become stronger for any situation which tended to reduce profitability. If operating costs were higher than projected for some reason, say an extended outage, there would be a strong incentive to reduce costs in other areas to meet budget and profitability projections. My concern is summarized in this way: The proposed transaction could create a major incentive for Entergy to reduce costs at Vermont Yankee, while at the same time, NRC is letting up on the amount of regulation it performs. This is not a good mix. Q. Please summarize your overall evaluation of this safety aspect of the proposed transaction. A. In prefiled direct testimony in Docket No. 6300, at 89, I concluded: While economic pressure from competition will always be a concern, it will be manageable at Vermont Yankee through directing the NRC's attention to monitoring the effects of cost cutting, and through state monitoring of areas which would indicate adverse effects of cost cutting. The continued aggressive implementation of the NRC strategy of reducing unnecessary regulatory burdens raises questions over how well economic pressure from competition can be

managed through directing NRC's attention to monitoring the effects of cost cutting. Therefore,

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I conclude that the safety impact of conversion of Vermont Yankee to an EWG is a negative aspect of the proposed transaction<sup>18</sup>.

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## Nuclear Waste Issues

- 5 Q. Please describe the consideration of the nuclear waste issues in the proposed sale.
- A. Earlier in my testimony, I have described an analytical assumption related to spent fuel
  damages expected from the DOE. There are three additional nuclear waste issues: 1) the
  opportunity for the Department to participate in settlement negotiations related to spent fuel
  damages, 2) cost responsibilities associated with Pre-1983 spent fuel, and 3) the availability of
  low-level radioactive waste disposal sites.

- 12 Q. Please identify the issue resulting in settlement negotiations related to spent fuel damages.
- A. As explained earlier in this testimony, Vermont has the expectation that Vermont Yankee will receive damages from the DOE regarding DOE's failure to perform. In the proposed transaction, ENVY would assume the overall risks and liabilities associated with the management

Nuclear plants are currently operating as EWG's in restructured regulatory environments in MA, CT, NY, NJ, PA and IL. While I do not monitor the day-to-day activities of these plants, as I do with Vermont Yankee, I am unaware of safety problems that have occurred yet as a result of their EWG status. Nevertheless, I still consider the competitive incentives that would be created by EWG status of Vermont Yankee, coupled with the changes occurring at NRC, as a negative factor for the sale.

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of spent nuclear fuel, including the possibility of receipt of damage payments from DOE. The
DOE Standard Contract would be transferred to ENVY as part of the sale.

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Please state the Department's expectation regarding resolution of damages related to DOE's failure to perform its contractual obligation to begin removing spent nuclear fuel.

Since the Purchase and Sales Agreement designates that any damage payments received will go to ENVY, the Department and the state's ratepayers would no longer have a financial interest in the DOE damages if the sale were approved. However, in addition to monetary damages, the Department's expectation is settlement will not occur without a firm and enforceable commitment that environmentally preferable storage/disposal will be provided for spent nuclear fuel. Specifically, the Department does not favor one settlement possibility floated by the DOE in which the federal government would assume title, pay management costs, and manage spent nuclear fuel indefinitely on nuclear plant sites (the "DOE take-title" option).

What is your position regarding the opportunity for the Department to participate in settlement negotiations related to spent fuel damages from DOE?

VYNPC would cede its control over litigation or settlement to ENVY as part of the sale.

I am concerned that ENVY might choose to settle with DOE for a storage/disposal solution that is not environmentally preferable. Therefore, I believe the sale should be conditioned upon

<sup>&</sup>lt;sup>19</sup> The Department believes that long-term or indefinite storage at Vermont Yankee equates to disposal, and that the location at Vermont Yankee on the banks of the Connecticut River is not an environmentally preferable disposal solution.

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ENVY's agreement that it will not accept a settlement in which spent nuclear fuel is stored indefinitely at Vermont Yankee, and that the Department should be afforded the opportunity to participate fully in settlement discussions. ENVY Witness Kansler, pf at 27, states that ENVY agrees to a portion of this recommended condition:

Entergy Nuclear VY agrees to use commercial best efforts to assure that spent fuel is removed from the VY Station as quickly as possible. Entergy Nuclear VY will allow the Department to participate in discussions with DOE that involve the VY Station and to participate in the decision whether to pursue discussions or to litigate. Entergy Nuclear VY agrees that it will not accept a "DOE take title" resolution of the spent fuel removed issue with respect to the VY Station.

Q.

A.

Please identify the issue regarding cost responsibilities associated with Pre-1983 spent fuel.

According to Section 2.2(i) of the Purchase and Sales Agreement, VYNPC will retain the Vermont Yankee Spent Fuel Disposal Trust related to the one-time fee for fuel used to generate electricity prior to April 7, 1983. In its analyses, the Department has assumed that VYNPC retains the liability associated with the one-time fee, but does not retain on-going liabilities associated with the management of Pre-1983 spent fuel. Possible costs associated with the management of Pre-1983 spent fuel are storage costs at Vermont Yankee, storage costs at an interim storage site, transportation costs to an interim storage site, and environmental liabilities associated with the management of this spent fuel. Therefore, the Department believes it must be clear that ENVY agrees that VYNPC is not responsible for these management costs for Pre-1983 spent fuel.

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1	Q.	Please identify the issue regarding the availability of low-level radioactive waste disposal sites.
2	A.	ENVY Witness Kansler states:
3 4 5 6		Entergy Nuclear VY will complete, at its own expense, the decommissioning of the VY Station once the plant is no longer used to generate power. Pf at 20
7		In order for ENVY to fulfill this commitment, it must dispose of low-level radioactive
8		waste. Furthermore, ENVY requires low-level radioactive waste disposal for wastes generated
9		as part of normal operations.
10		
11	Q.	Are low-level radioactive waste disposal facilities available for Vermont Yankee waste?
12	A.	Yes. Envirocare of Utah accepts Class A <sup>20</sup> wastes (the least radioactive category of low
13		level radioactive waste). Currently, Barnwell, SC, accepts all categories (Classes A, B and C) of
14		low level radioactive waste. However, Barnwell will continue to decrease the amounts of these
15		wastes accepted until 2008, when it will become unavailable to Vermont Yankee <sup>21</sup> .
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Are there other possibilities for the disposal commitment ENVY proposes to assume?

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Q.

<sup>&</sup>lt;sup>20</sup> Low-level radioactive waste is classified into categories by the NRC, from lowest to highest radioactivity, as Class A, Class B and Class C. The approximate percentage of VYNPC decommissioning waste by category is Class A - 95%, Class B - <5%, Class C - <1%.

<sup>&</sup>lt;sup>21</sup> The Barnwell facility is the compact disposal facility for the Atlantic Compact, consisting of the states of SC, NJ and CT. After 2008, Barnwell is scheduled to accept only in-compact wastes.

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A. Yes. There are various possibilities for disposal solutions, among which are the following. Vermont is a member of the Texas Compact and has the expectation that the State of Texas will develop a disposal facility for disposal of Vermont low-level radioactive wastes<sup>22</sup>.

Also, Envirocare of Utah wishes to expand its disposal capability to include Classes B and C wastes<sup>23</sup>. However, there is no assurance these possibilities will result in disposal options for ENVY, and it is possible that a disposal facility will not be available to ENVY.

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8 Q. What is your concern related to this low-level radioactive waste disposal issue?

The Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA of 1985), Section 3(a)(1)(A), established that each state is responsible for providing for the disposal of low-level radioactive waste generated within the state. Vermont has exercised due diligence in meeting this responsibility by becoming a member of the Texas Compact. It is important if ENVY assumes the responsibility for disposal of Vermont Yankee low-level radioactive waste, that it recognize that Vermont has met its responsibilities under the LLRWPAA of 1985, and that it will hold Vermont harmless for any liability if no disposal facility is available.

<sup>&</sup>lt;sup>22</sup> In the Purchase and Sales Agreement, ENVY assumes the liability for payment of Texas Compact Fees, if they are required. While it is true that Vermont expects Texas to develop a disposal facility, no significant progress has been made in this development.

<sup>&</sup>lt;sup>23</sup> Envirocare's application to the state of Utah to accept Classes B and C wastes has been withdrawn because of complications related to the Goshute Indian Tribe's proposal to develop an interim spent fuel storage site nearby. It is expected Envirocare will again seek expansion of its disposal capabilities at a later date.

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## 1 Decommissioning Issues

2 Q. Please describe the consideration of decommissioning issues for the proposed sale.

A. In the proposed transaction, ENVY would assume the responsibility for performing decommissioning of Vermont Yankee, including restoring the site to near its condition before Vermont Yankee was constructed, and management of spent nuclear fuel. ENVY will receive the Vermont Yankee decommissioning trust fund from VYNPC as a pre-paid decommissioning trust. ENVY will maintain the decommissioning fund as an independent trust in accordance with NRC requirements.

Earlier in my testimony, I identified the Department's assumption regarding decommissioning collections, which is changed from Docket No. 6300. I have several other concerns related to decommissioning which I believe should be conditions on ENVY if the Board chooses to approve the sale.

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Please identify the recommended condition related to site restoration.

In discovery, ENVY stated, "Once the site is no longer used for nuclear purposes or non nuclear commercial, industrial or other similar uses consistent with the orderly development of the site, Entergy would intend to restore the site by removing all structures and regrading and reseeding the property." Response to DPS Information Request 1-2. ENVY Witness Kansler, pf at 27, stated:

At the time of evaluation of the decommissioning fund for the NRC or for the site-specific study, Entergy Nuclear VY will provide additional funds

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1 or other acceptable financial assurances as needed to ensure that funding will be sufficient to accomplish decommissioning, including site 2 restoration and spent fuel management. 3 4 5 If the Board chooses to approve the sale, I believe this commitment that 6 decommissioning includes site restoration, and that site restoration costs are included in 7 decommissioning costs, should be made a condition of the sale. 8 9 O. Please identify the recommended condition related to spent fuel management. 10 A. In the Purchase and Sales Agreement, ENVY would assume the responsibility for 11 managing Vermont Yankee spent nuclear fuel until this responsibility is assumed by the DOE. In 12 discovery, ENVY clarified that costs associated with spent fuel management following plant 13 closure were included in the decommissioning fund and considered part of the decommissioning 14 task (see Exhibit DPS-WKS-7). In the statement quoted above for ENVY Witness Kansler's 15 prefiled testimony, ENVY agrees to include spent fuel management costs in the decommissioning 16 fund. 17 If the Board chooses to approve the sale, I believe this commitment that 18 decommissioning includes spent fuel management, and that spent fuel management costs are 19 included in decommissioning costs, should be made a condition of the sale. 20 21 O. Please identify recommended conditions related to assuring the integrity of the proposed ENVY

decommissioning fund for Vermont Yankee.

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1 Α. The VYNPC decommissioning fund, which would be transferred to ENVY in the 2 proposed transaction, represents ratepayer monies provided for the purpose of decommissioning. In order to assure these monies are used for the purpose intended, two conditions are 3 recommend. First, I recommend the Board condition the sale to assure the entire VYNPC 4 decommissioning trust fund is transferred into the ENVY decommissioning trust fund<sup>24</sup>. Second, 5 I recommend that the Board condition the sale on ENVY's agreement to submit any proposed 6 7 disbursement of trust funds for purposes not related to decommissioning, other than ordinary administrative expenses, and any changes to its decommissioning trust fund agreement, to the 8 Board for approval. In its NRC License Transfer Application, ENVY has committed to notify 9 NRC upon changes to and use of funds from the decommissioning trust<sup>25</sup>. However, there is no 10 11 guarantee NRC will act to protect the monetary interests of Vermont ratepayers. Therefore, the 12 condition of Board approval of changes to and use of funds (for non-decommissioning purposes)

<sup>&</sup>lt;sup>24</sup> ENVY has stated its agreement with this condition in response to DPS Information Request 1-40: "Section 6.10(b) of the PSA requires that all assets of the VYNPC decommissioning trust be transferred to the Entergy decommissioning trust. Accordingly, there can be no diversion for any other purpose at the time of transfer. Such transfer will occur <u>at</u> the closing, not after the closing. Additionally, Entergy expects the NRC order approving the transfer of the license will expressly restrict the use of funds."

<sup>&</sup>lt;sup>25</sup> In its NRC License Transfer Application, at 12, ENVY states: "The [Decommissioning] Trust will provide that: (1) no funds may be disbursed from the Trust funds, other than for ordinary administrative expenses, unless the Trustee first gives 30 days prior notice to the Director, Office of Nuclear Reactor Regulation (NRR), of the NRC and receives no written notice of objection from the NRC; . . . (3) no material amendments will be made to the Trust agreement without 30 days prior written notification to the Director, NRR."

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1 from the decommissioning trust is recommended since the Board has the responsibility of protecting the monetary interests of Vermont ratepayers.

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Please identify recommended conditions which would allow the Board and the Department to monitor the status of the proposed ENVY decommissioning fund for Vermont Yankee.

Vermont Yankee's decommissioning funding requirements are currently under FERC jurisdiction, and the Department has participated in cases at the FERC regarding the fund. If ENVY were granted EWG status and the ability to charge market-based rates, FERC would no longer exercise jurisdiction over the Vermont Yankee decommissioning fund. Unless the Board establishes a review of the decommissioning fund as a condition to the proposed transaction, there would be no state oversight of the Vermont Yankee decommissioning fund. The state would need to have oversight of the Vermont Yankee decommissioning fund for several reasons. First, the NRC monitors the adequacy of the decommissioning fund on a different basis from the FERC. The FERC process consists of an investigation which allows stakeholders to review the bases for the estimates. The NRC process is a semi-annual report identifying the amount of funds estimated to be required by the NRC formula described in 10 C.F.R. §50.75(b) and (c). This NRC formula results in lower requirements than those coming from the FERC process. The NRC process does not allow stakeholder involvement. The NRC process only verifies amounts to accomplish the NRC definition of decommissioning and not amounts to accomplish the additional commitments which ENVY has made, namely to return the site to a "greenfield"

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condition and to manage spent nuclear fuel until the federal government removes it for disposal.

Vermont Should remain a stakeholder for decommissioning for two reasons. First, since Vermont Yankee is located in Vermont, assurance of the ability to properly manage the residual radioactivity at Vermont Yankee is a specific state interest. Second, since the potential exists for sharing excesses in the decommissioning fund which may occur if decommissioning is delayed, the fund amount and management is an interest of the state.

Therefore, I recommend two conditions which would allow the state to monitor the status of the proposed ENVY decommissioning fund for Vermont Yankee. First, I believe the Board should secure ENVY's agreement to submit to the Board and the Department a quarterly report of decommissioning trust fund performance, including identification of book values, current market values, and after-tax values of each category of investments in the qualified and non-qualified funds, as reported to ENVY by the funds' managers<sup>26</sup>. Second, I believe the Board should condition the sale upon ENVY's agreement to perform and release periodic studies of decommissioning costs. In his testimony, ENVY Witness Kansler, at 27, has stated agreement to these periodic studies:

Entergy Nuclear VY agrees to update the site's decommissioning cost study at least once every five years and submit the results to the Board and the Department. The first of these studies will be due no later than the fifth anniversary of the closing. Entergy Nuclear VY agrees to (i) inform the public of the estimated cost of decommissioning which resulted

<sup>&</sup>lt;sup>26</sup> A similar requirement for a quarterly decommissioning report is included in Section 4.5 of the Settlement Agreement (related to the Vermont Yankee decommissioning) in FERC Docket EC00-46-000, et al., dated June 25, 2001.

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from the analysis and (ii) participate in a public discussion of the results at a forum to be determined in conjunction with the Department.

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Q. Please identify the recommended condition related to sharing of excess decommissioning funds if decommissioning is delayed.

The decommissioning fund would be transferred to ENVY as well as the decommissioning risks and liabilities. ENVY would be required to make up any shortfalls, but likewise, would benefit from any excess funds. If there were an excess, the Department's expectation is that ENVY could only acquire the excess funds after decommissioning was completed<sup>27</sup>. Earlier in this testimony, I have recommended a condition that the Board approve any removal of funds for non-decommissioning purposes.

Without license renewal, if immediate dismantling were pursued by ENVY and completed in a timely manner, this would be a fair treatment of the decommissioning funds. If ENVY can complete decommissioning in a timely manner with an excess in the fund, it should be entitled to the excess, because it has taken some risk of higher costs.

However, if ENVY were to choose to delay dismantling significantly beyond the date of the expiration of the current operating license, there would be the possibility of very large excesses in the decommissioning fund. With license renewal, decommissioning could be delayed 20 years or more.

<sup>&</sup>lt;sup>27</sup> Decommissioning is complete when radioactivity is determined to have been removed, meeting the NRC's site release standard, and when NRC terminates the 10 C.F.R. Part 50 license for the site.

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1		Therefore, the Board should condition approval by requiring a sharing between
2		ratepayers and ENVY of excess funds in the decommissioning fund if decommissioning is
3		significantly delayed.  In his testimony, ENVY Witness Kansler, at 27, has agreed to this
4		condition:
5 6 7 8 9		Entergy Nuclear VY also agrees that if completion of decommissioning is delayed beyond the currently effective completion date of March 31, 2022, excess decommissioning trust funds will be shared equally between Entergy Nuclear VY and electric consumers.
10		
11	Q.	Do you have an additional comment regarding the transfer of decommissioning risk.
12	A.	Yes. In prefiled direct testimony for Docket No. 6300, at 46 to 58, I testified concerning
13		decommissioning risk. My conclusions were:
14 15 16 17 18 19 20 21 22 23 24 25		I believe AmerGen's risk in this area [i.e., base dismantling decommissioning exclusive of spent fuel management and low-level radioactive waste disposal] is fairly limited. At 52.  Overall, while uncertainties still exist, the risks leading to highly escalating decommissioning costs are less today than they have been in the past. Id.  The transfer of financial risk associated with decommissioning is a factor in favor of the sale. Although decommissioning risks are perceived by some to be great, and although VYNPC sponsors wish to shed this risk, the ability to delay decommissioning to earn sufficient funds lessens the significance of this factor. At 58.
26 27		Since Docket No. 6300, the Department has changed its assumptions regarding

decommissioning collections, as described earlier in this testimony. Specifically, we understand

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1		that the size of the fund allows it to be considered pre-paid, that the fund can grow by investmen
2		returns to levels allowing completion of decommissioning, and that there is no significant impact
3		in delaying decommissioning. Because of this additional understanding regarding
4		decommissioning, I do not consider the transfer of decommissioning risk to be a significant
5		factor in the sale <sup>28</sup> .
6	Lice	nse Renewal
7	Q.	Please describe the consideration of the effect of the sale on the possibility of license renewal.
8	A.	I recommend that, if the Board chooses to approve the proposed sale, the approval be
9		conditioned on ENVY's agreement that it will obtain approval from the Board prior to operating
10		Vermont Yankee beyond its current license termination date of March 2012. In his direct
11		testimony, ENVY Witness Kansler, at 26, agrees to this condition:
12		[ENVY] agrees to a condition in an order issued by the Board approving
13		this sale to the effect that the Certificate of Public Good ("CPG") issued
14		by the Board will be limited to a term of years ending with the VY
15		Station's current license termination date (March 2012) and that operation
16		of the VY Station beyond its license termination date will be allowed only
17		if the CPG has been renewed by the Board.
18		

Vermont Control Issues

<sup>&</sup>lt;sup>28</sup> The two areas of decommissioning in which ENVY may claim to assume risk are in low-level radioactive waste disposal and spent fuel management. Both could result in unanticipated future costs. However, as DPS Witness Crane testifies, there is no assurance that ENVY will have the resources for these costs, and therefore the assumption of risk cannot be credited.

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2 regarding Vermont Yankee which would promote the general good of the state. 3 A. In prefiled direct testimony for Docket No. 6300, at 90 to 96, I evaluated aspects of the AmerGen proposal that concerned Vermont's control over Vermont Yankee. I concluded that 4 5 much statutory control was not altered by the sale, since Vermont Yankee is primarily regulated by the FERC and NRC. For other aspects, such as the loss of FERC review of 6 7 decommissioning, I recommended conditions for approval of the sale. In these areas, the same conclusions apply to the proposed ENVY transaction. Earlier in my testimony, I have 8 recommended conditions to replace FERC's review of decommissioning and to guarantee the 9 10 ability to have access to Vermont Yankee documents and conduct inspections at the plant. 11 In the specific area of the ability of the Board and the state to take actions regarding 12 Vermont Yankee which would promote the general good of the state, I evaluated in Docket No. 13 6300 (pf at 95):

Please describe the proposed sale's effect on the ability of the Board and the state to take actions

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Q.

Under the present ownership, Vermont Utilities, CVPS and GMP, have a majority interest in VYNPC. The local and relatively accessible nature of CVPS and GMP create a specific sensitivity to Vermont concerns. AmerGen-Vermont, backed by PECO, British Energy and potentially Unicom, will be a powerful international nuclear conglomerate. This conglomerate will have great political influence and great influence at the NRC. Concerns of Vermont will be small compared to the issues and arenas that Unicom/PECO/British Energy/AmerGen interacts in. I consider this expected reduction in sensitivity to Vermont concerns as a negative aspect of the proposed sale.

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This same evaluation applies to the ENVY proposal. Entergy is a large, powerful company. Conversion of Vermont Yankee from a cost-of-service regulated plant to an EWG will reduce the Board's ability to take actions regarding Vermont Yankee through regulation of CVPS and GMP. Such actions could include, but are not limited to, possible decisions about premature shutdown, decommissioning methods, relicensing, relations with the federal government concerning disposition of both high and low level radioactive waste, and emergency response planning. Therefore, the large company nature of ENVY and the possible reduction in the Board and the state's ability to take actions regarding Vermont Yankee which would promote the general good of the state are considered a negative aspect of the proposed transaction.

A.

## **CONCLUSION**

Q. What do you conclude regarding the proposed transaction?

In the comparison of alternatives, DPS Witness Biewald determined there would be a marginally small, positive economic benefit to ratepayers with the sale without license renewal. If the license were renewed, the sale would be economically adverse to ratepayers. The transfer of operating cost risks appears to be a positive aspect of the sale, while the corporate structure related to financial assurances, decreased safety incentives inherent with EWG status plants, and the reduction in the ability of the Board and state to take future actions related to Vermont Yankee to promote the general good of the state, are negative aspects of the sale.

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1		The Department can support a sale of VYNPC as evidenced by its previous support for
2		the AmerGen MOU. However, the issues related to financial assurance, the issues of power
3		supply and economic value beyond 2012, and the additional conditions must be clarified,
4		resolved or conditioned for the sale to promote the general good of the state of Vermont.
5		
6	Q.	Does this conclude your testimony?
7	A.	Yes, it does.
8		